

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): An anisotropic material comprising an alternating-line pattern and a layer of at least one functional compound selected from the group consisting of a semiconductor compound, an electrically conductive compound, a photochromic compound and a thermochromic compound, formed on a surface of the alternating-line pattern, wherein one type of lines in the alternating-line pattern surface comprises a fluorine-containing compound, or ~~silicon~~the fluorine-containing compound is at least one fluorine-containing organic silane compound, fluorine-containing organic thiol compound, fluorine-containing organic disulfide compound, and fluorine-containing organic phosphate ester compound, selected from the group consisting of:

(a) a fluorine compound which has a branched perfluoroalkyl group having 5 or less carbon atoms,

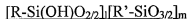
(b) a fluorine compound having a perfluoropolyether group,

(c) a fluorine compound having a polymer structure obtained by polymerizing a monomer which has a perfluoroalkyl group having 5 or less carbon atoms, and

(d) a fluorine compound having a linking group which is any one of an urethane group, an ester group, an ether group and an amide group, existing between a perfluoroalkyl group having 5 or less carbon atoms and a functional group which is a silane group, a thiol group, a disulfide group or a phosphoric acid group; or

the fluorine-containing compound is at least one selected from the group consisting of:

(e) an incompletely-condensed silsesquioxane which has a perfluoroalkyl group having 5 or less carbon atoms, represented by the general formula:



wherein R and R' represent R_f, R_f-A, an alkyl group (having 1 to 22 carbon atoms), or a derivative of an alkyl group (having 1 to 22 carbon atoms) (provided that at least one of R and R' is R_f or R_f-A) (wherein R_f represents a perfluoroalkyl group having 5 or less carbon atoms, and A represents an alkylene group having 1 to 4 carbon atoms, a -SO₂N(R²¹)R²²- group (provided that R²¹ is an alkyl group having 1 to 4 carbon atoms, and R²² is an alkylene group having 1 to 4 carbon atoms) or a -CH₂CH(OH)CH₂- group), and l and m represent such a number that a molecular weight of the incompletely-condensed silsesquioxane is within a range from 500 to 100000, and

(f) a completely-condensed silsesquioxane which has a silane group and a perfluoroalkyl group having 5 or less carbon atoms, represented by the formula:



wherein R represents R_f, R_f-A, an alkyl group (having 1 to 22 carbon atoms), or a derivative of an alkyl group (having 1 to 22 carbon atoms) (provided that at least one of R is R_f or R_f-A) (wherein R_f represents a perfluoroalkyl group having 5 or less carbon atoms, A represents an alkylene group having 1 to 4 carbon atoms, a -SO₂N(R²¹)R²²- group (provided that R²¹ is an alkyl group having 1 to 4 carbon atoms, and R²² is an alkylene group having 1 to 4 carbon atoms) or a -CH₂CH(OH)CH₂- group), R' represents an organic group containing SiX₃, wherein X is a halogen atom or OC_nH_{2n+1} (n=1 to 4) and l and m represent such a number that a molecular weight of the completely-condensed silsesquioxane is within a range from 500 to 100000.

2. (original): The anisotropic material according to claim 1, wherein a difference between surface free energy of the type of lines comprising the fluorine compound or silicone and surface free energy of the other type of lines is at least 5 mJ/m².

3. (original): The anisotropic material according to claim 1, wherein the alternating-line pattern has a line width of 0.5 to 100 μm .

4. (original): The anisotropic material according to claim 1, wherein the alternating-line pattern has unevenness of not more than 10 nm.

5. (original): The anisotropic material according to claim 1, wherein the shape of droplets is distorted when 2 μL of ethanol is gently dropped from above the alternating-line pattern, and the degree of distortion is at least 1.1 in terms of a ratio L/W of the length in a major axis (L) to the length in a minor axis (W) of droplets.

6. (original): The anisotropic material according to claim 1, wherein the alternating-line pattern comprises an organic silane compound, an organic thiol compound, an organic disulfide compound and/or an organic phosphoric acid ester.

7. (withdrawn-currently amended): A method for producing an anisotropic material comprising an alternating-line pattern and a layer of at least one functional compound selected from the group consisting of a semiconductor compound, an electrically conductive compound, a photochromic compound and a thermochromic compound, formed on a surface of the alternating-line pattern, wherein one type of lines in the alternating-line pattern surface comprises a fluorine-containing compound, the fluorine-containing compound is at least one fluorine-containing organic silane compound, fluorine-containing organic thiol compound, fluorine-containing organic disulfide compound, and fluorine-containing organic phosphate ester compound, selected from the group consisting of:

(a) a fluorine compound which has a branched perfluoroalkyl group having 5 or less carbon atoms,

(b) a fluorine compound having a perfluoropolyether group,

(c) a fluorine compound having a polymer structure obtained by polymerizing a monomer which has a perfluoroalkyl group having 5 or less carbon atoms, and

(d) a fluorine compound having a linking group which is any one of an urethane group, an ester group, an ether group and an amide group, existing between a perfluoroalkyl group having 5 or less carbon atoms and a functional group which is a silane group, a thiol group, a disulfide group or a phosphoric acid group; or

the fluorine-containing compound is at least one selected from the group consisting of:

(e) an incompletely-condensed silsesquioxane which has a perfluoroalkyl group having 5 or less carbon atoms, represented by the general formula:



wherein R and R' represent R_f, R_f-A, an alkyl group (having 1 to 22 carbon atoms), or a derivative of an alkyl group (having 1 to 22 carbon atoms) (provided that at least one of R and R' is R_f or R_f-A) (wherein R_f represents a perfluoroalkyl group having 5 or less carbon atoms, and A represents an alkylene group having 1 to 4 carbon atoms, a -SO₂N(R²¹)R²²- group (provided that R²¹ is an alkyl group having 1 to 4 carbon atoms, and R²² is an alkylene group having 1 to 4 carbon atoms) or a -CH₂CH(OH)CH₂- group), and l and m represent such a number that a molecular weight of the incompletely-condensed silsesquioxane is within a range from 500 to 100000, and

(f) a completely-condensed silsesquioxane which has a silane group and a perfluoroalkyl group having 5 or less carbon atoms, represented by the formula:



wherein R represents Rf, Rf-A, an alkyl group (having 1 to 22 carbon atoms), or a derivative of an alkyl group (having 1 to 22 carbon atoms) (provided that at least one of R is Rf or Rf-A) (wherein Rf represents a perfluoroalkyl group having 5 or less carbon atoms, A represents an alkylene group having 1 to 4 carbon atoms, a $-SO_2N(R^{21})R^{22}$ - group (provided that R^{21} is an alkyl group having 1 to 4 carbon atoms, and R^{22} is an alkylene group having 1 to 4 carbon atoms) or a $-CH_2CH(OH)CH_2-$ group), R' represents an organic group containing SiX_3 , wherein X is a halogen atom or OC_nH_{2n+1} ($n=1$ to 4) and l and m represent such a number that a molecular weight of the completely-condensed silsesquioxane is within a range from 500 to 100000,

which method comprises applying a solution of at least one functional compound selected from the group consisting of a semiconductor compound, an electrically conductive compound, a photochromic compound and a thermochromic compound on the surface of an alternating-line pattern, one type of lines of which comprises a fluorine-containing compound ~~or silicone~~.

8. (withdrawn): The method according to claim 7, wherein a liquid which dissolves the functional compound is a solvent having a surface tension of not more than 30 mN/m.

9. (withdrawn): A method for producing a functional material, comprising using, as a template, a pattern surface composed of plural regions each having different surface free energy, characterized in that:

(1) at least one region of the pattern surface is treated with a fluorine compound, and
(2) the method comprises applying a functional compound solution on the pattern surface and removing a solvent.

10. (canceled).

11. (withdrawn): A functional material produced by the method according to claim 9.
12. (withdrawn): A method for producing a functional material, which comprises applying a functional compound to a pattern surface having at least one region surface-treated with a fluorine compound.
13. (withdrawn): The method according to claim 12, wherein the fluorine compound comprises a fluorine compound having the following structure:
 - (a) a fluorine compound which has a branched fluoroalkyl group having 5 or less carbon atoms,
 - (b) a fluorine compound having a perfluoropolyether group,
 - (c) a fluorine compound having a polymer structure obtained by polymerizing a monomer which has a fluoroalkyl group having 5 or less carbon atoms,
 - (d) a fluorine compound having a linking group which is any one of an urethane group, an ester group, an ether group and an amide group, existing between a fluoroalkyl group having 5 or less carbon atoms and a functional group,
 - (e) an incompletely-condensed silsesquioxane which has a fluoroalkyl group having 5 or less carbon atoms, and
 - (f) a completely-condensed silsesquioxane which has a silane group and a fluoroalkyl group having 5 or less carbon atoms.
14. (withdrawn): A functional material produced by the method according to claim 12.